AN832
APPLICATION NOTE

L4981A SYNCHRONIZATION

by C. Adragna

Devices Description

In most of SMPS using power factor correction, the convertion is accomplished with a PFC stage, in boost topology, that delivers a preregulated DC voltage to a downstream section. This provides the regulated final DC buses, ensuring also the galvanic insulation from the mains. Both sections use a P.W.M. technique each with their own control.

This means that two different switch mode controllers work very close one to the other producing some potential problem (eg. interferences, beating etc.).

The L4981A controller is provided with an input/output (I/O) synchronization pin (see datasheet pin16 description) which allows the device to be used both as a master or a slave in synchronised configuration.

Let us take into consideration how to interface the L4981A with other PWM controllers each requiring different interconnections. The devices that have been considered in the following examples are the L4990 (PWM primary contoller provided with I/O sync.) and the UC3842 PWM controller without any dedicated pin for sync.).

When L4990 with L4981A are used, different situations can be considered :

The PFC controller L4981A is the master and the L4990 is the slave (see fig. 1). Since the L4990 is provided with a positive edge input sync., the two sync. pins can be simply wired together.

The L4990 is the master and the L4981A is the slave (see fig. 2).

Figure 1. Sync. example with L4981A used as master.

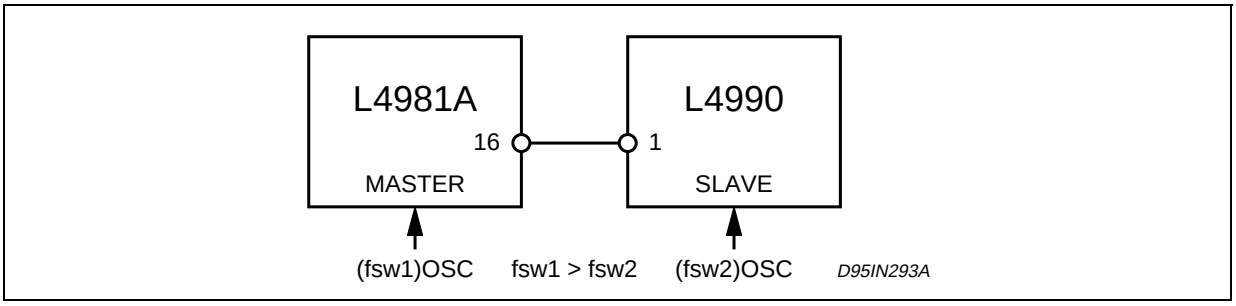
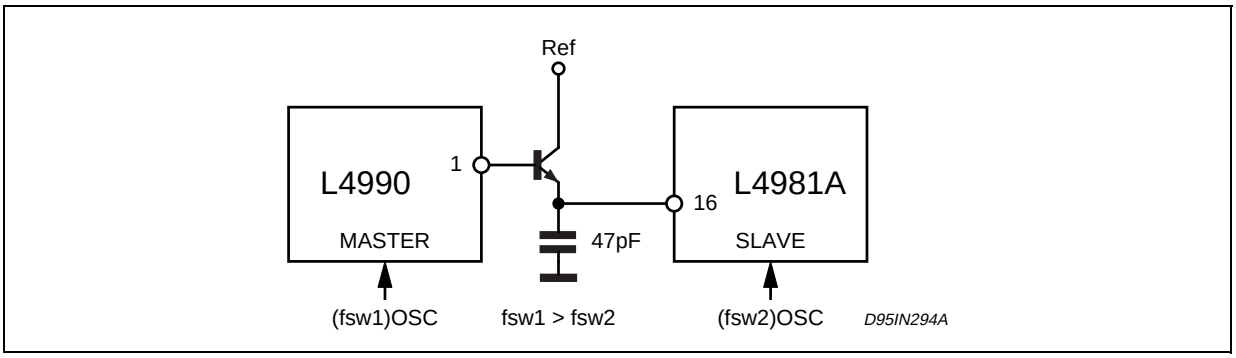


Figure 2. Sync. example with L4981A used as slave



The L4981A needs a minimum set-up time to recognize the sync. signal (see datasheet) and for this reason the reported circuit is suggested. Using the UC3842 with the L4981A it is necessary to consider that the UC3842 does not have a dedicated sync. pin.

The suggested circuits are shown in fig. 3 and 4 for both master/slave configurations. For the above described solutions, it is necessary to take care of properly setting the oscillation frequency of the two devices: in practice the master oscillator frequency has to be higher than the slave one in any condition.

Finally, in fig. 5, it is mentioned an example in which an external frequency synchronizes both the PFC and the PWM controller (L4990 or UC3842).

This can be a real situation in a TV or monitor application.

Figure 3. Sync. example between L4981A and a current mode controller.

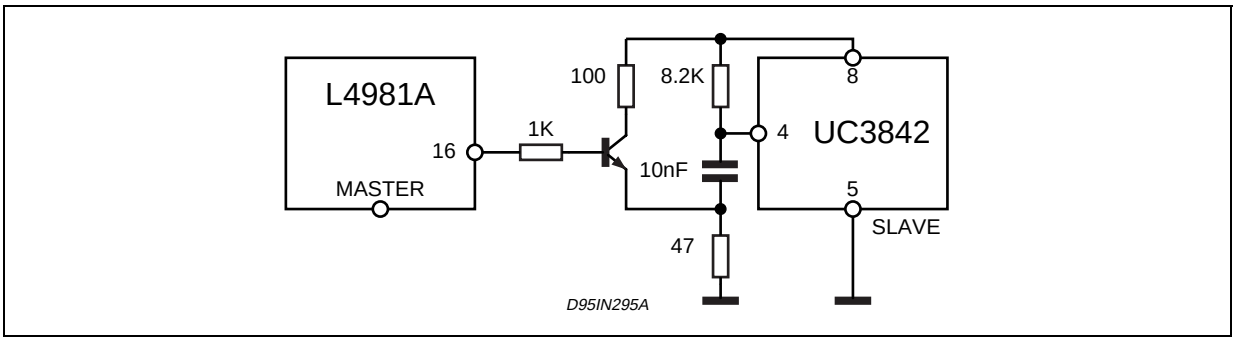


Figure 4.

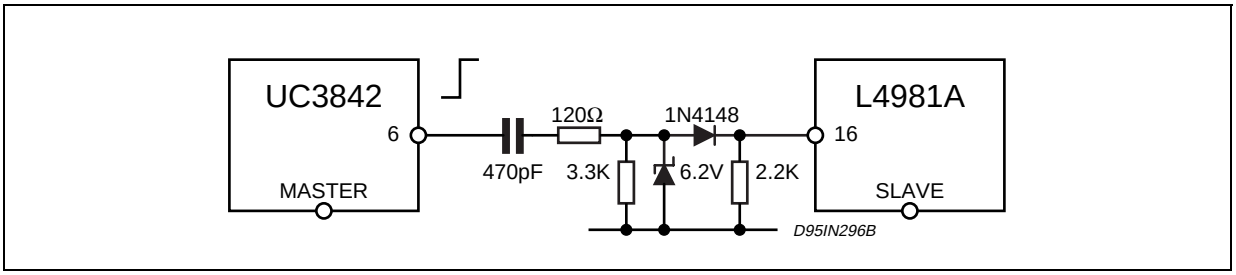
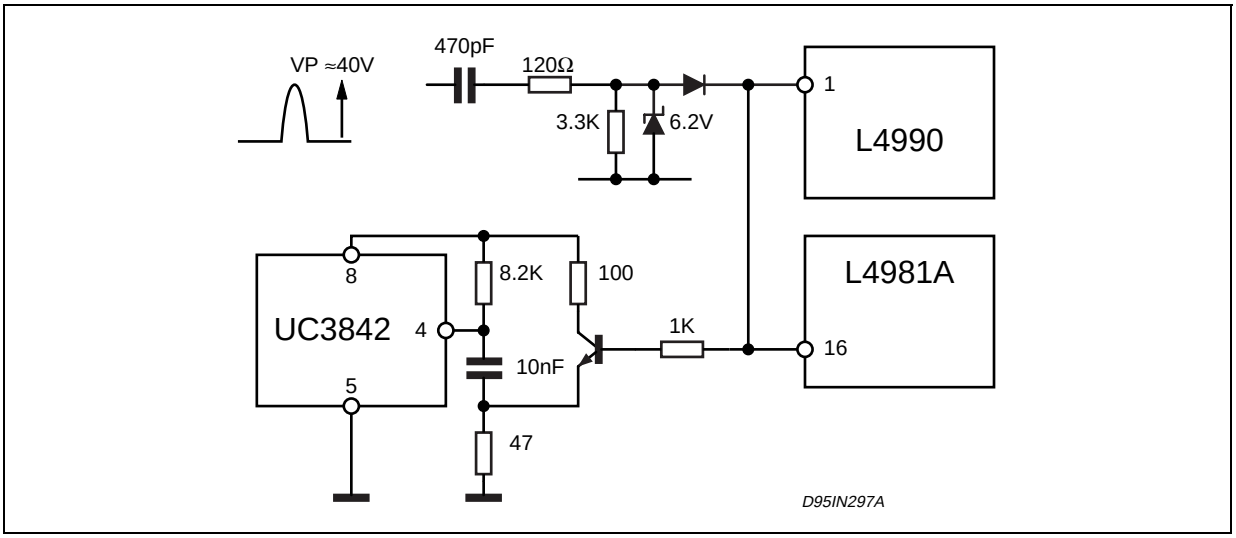


Figure 5.



Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics.
All other names are the property of their respective owners

© 2003 STMicroelectronics - All rights reserved

STMicroelectronics GROUP OF COMPANIES
Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States
www.st.com